IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Withdrawn) An optical apparatus comprising:

an optical system comprising a separable partial optical system;

a variable optical-property element arranged in the optical system, a ray-deflecting function of the variable optical-property element being changeable itself;

a driving circuit for driving the variable optical-property element; and

an arithmetical circuit,

wherein the ray-deflecting function of the variable optical-property element is changed in accordance with a change of an object area corresponding to an image to be used so that aberration of the optical system caused by the change of the object area is compensated for.

2. (Currently Amended) An optical apparatus comprising:

an optical system having a reflection-type variable optical-property element;

a driving circuit ~~for driving~~ configured to drive the reflection-type variable optical-property element;

an image sensor arranged at an image position of the optical system;

an arithmetical unit connected with the driving circuit; and

an image processor connected with the arithmetical unit,

wherein the ~~optical apparatus~~ image processor is provided with an electronic zoom function ~~in~~ such that an image ~~formed on~~ picked up by the image sensor ~~by the optical system~~ is magnified ~~by the image processor~~ based on electronic zoom data,

wherein the arithmetical unit performs a predetermined calculation based on an output of the image sensor and the electronic zoom data,

wherein the predetermined calculation generates a control signal that controls a ray-deflecting function of the reflection-type variable optical property element, and

wherein the ray-deflecting function of the reflection-type variable optical-property element is changed in accordance with performance of the electronic zoom function based on the control signal.

3. (Currently Amended) An optical apparatus according to claim 2,

wherein the optical system comprises at least two optical element units, and

wherein when the electronic zoom function is performed, at least [[o ne]] one of the optical element units is subjected to a change.

4.(Withdrawn) An optical apparatus comprising:

a variable magnification optical system comprising a separable partial optical system;

a variable optical-property element arranged in the variable magnification optical system, a ray-deflecting function of the variable optical-property element being changeable itself;

a driving circuit for driving the variable optical-property element; and

an arithmetical circuit,

wherein the ray-deflecting function of the variable optical-property element is changed in accordance with a magnification change of the variable magnification optical system so that aberration of the variable magnification optical system varied in accordance with the magnification change is compensated for.

5.(Withdrawn) An optical apparatus comprising:

an optical system comprising a combination of a plurality of optical units;

a variable optical-property element arranged in one of the plurality of optical units, a ray-deflecting function of the variable optical-property element being changeable itself;

a driving circuit for driving the variable optical-property element; and

an arithmetical circuit,

wherein the plurality of optical units are independent of one another, and

wherein a ray-deflecting function of the variable optical-property element is changed in accordance with a change of the combination of the optical units so that aberration of the optical system varied in accordance with the change of the ray-deflecting function is compensated for.

6.(Withdrawn) An optical apparatus comprising:

a variable magnification optical system comprising a combination of a plurality of optical units;

a variable optical-property element arranged in one of the plurality of optical units, a ray-deflecting function of the variable optical-property element being changeable itself;

a driving circuit for driving the variable optical-property element; and

an arithmetical circuit,

wherein the plurality of optical units are separable from one another, and

wherein a ray-deflecting function of ray deflection of the variable optical-property element is changed in accordance with a magnification change of the variable magnification optical system so that aberration of the variable magnification optical system varied in accordance with the magnification change is compensated for.

7.(Withdrawn) An optical apparatus according to claim 1, wherein the optical apparatus is an observation apparatus.

8.(Withdrawn) An optical apparatus according to claim 1, wherein the optical apparatus is a telescope.

9.(Withdrawn) An optical apparatus according to claim 1, wherein the optical apparatus is a microscope.

10.(Withdrawn) An optical apparatus according to claim 1, wherein the variable optical-property element is a variable focal-length lens.

11.(Withdrawn) An optical apparatus according to claim 1, wherein the variable optical-property element is a variable mirror.

12.(Currently Amended) An optical apparatus comprising:

an optical system having a reflection-type variable optical-property element;

an image sensor arranged at an image position of the optical system;

a driving circuit configured to drive the reflection-type variable optical-property element;

an arithmetical unit connected with the driving circuit; and

an image processor connected with the arithmetical unit,

wherein the ~~optical apparatus~~ image processor is provided with an electronic zoom function in that an image ~~formed on~~ picked up by the image sensor ~~by the optical system~~ is magnified ~~by the image processor~~ based on electronic zoom data,

wherein the arithmetical unit performs a predetermined calculation based on an output of the image sensor and the electronic zoom data,

wherein the predetermined calculation generates a control signal that controls the optical system, and

wherein a part of the optical system is changed in accordance with performance of the electronic zoom function based on the control signal.

13.(Currently Amended) An optical apparatus comprising:

an optical system including a reflection-type variable optical-property element;

a driving circuit ~~for driving~~ configured to drive the reflection-type variable optical-property element;

an image sensor arranged at an image position of the optical system;

an arithmetical unit connected with the driving circuit; and

an image processor connected with the arithmetical unit,

wherein the ~~optical apparatus~~ image processor is provided with an electronic zoom function in that an image ~~formed on~~ picked up by the image sensor ~~by the optical system~~ is magnified ~~by the image processor~~ based on electronic zoom data,

wherein the arithmetical unit performs a calculation for obtaining sharpness of an image in an area magnified by the electronic zoom function based on an output of the image sensor and the electronic zoom data,

wherein the calculation generates a control signal for maximizing the sharpness, and

wherein ~~that~~ the reflection-type variable optical-property element is driven by the driving circuit ~~so that sharpness of an image in an area magnified by the electronic zoom function is maximized~~ based on the control signal.

14.(Currently Amended) An optical apparatus comprising:

an optical system including a reflection-type variable optical-property element;

a driving circuit ~~for driving~~ configured to drive the reflection-type variable optical-property element;

an image sensor arranged at an image position of the optical system;

an arithmetical unit connected with the driving circuit; and

an image processor connected with the arithmetical unit,

wherein the ~~optical apparatus~~ image processor is provided with an electronic zoom function in that an image ~~formed on~~ picked up by the image sensor ~~by the optical system~~ is magnified ~~by the image processor, and~~ based on electronic zoom data,

~~wherein the variable optical property element is driven by the driving circuit so that~~ wherein the arithmetical unit performs a calculation for obtaining sharpness of an image in an area magnified by the electronic zoom function ~~is determined in view of~~ based on an output of the image sensor and the electronic zoom data, upon taking into consideration a change of an imaging state caused by at least one of a change of an object distance,

temperature, humidity, a manufacturing error, a change with age, vibration, and an optical magnification change,

wherein the calculation generates a control signal based on the sharpness, and

wherein the reflection-type variable optical-property element is driven by the driving circuit based on the control signal.

15.(Currently Amended) An optical apparatus comprising:

an optical system including a reflection-type variable optical-property element;

a driving circuit ~~for driving~~ configured to drive the reflection-type variable optical-property element;

an image sensor arranged at an image position of the optical system;

an arithmetical unit connected with the driving circuit; and

an image processor connected with the arithmetical unit,

wherein the ~~optical apparatus~~ image processor is provided with an electronic zoom function in that an image ~~formed on~~ picked up by the image sensor ~~by the optical system~~ is magnified ~~by the image processor, and~~ based on electronic zoom data,

~~wherein the variable optical-property element is driven by the driving circuit so that~~ wherein the arithmetical unit performs a calculation for obtaining sharpness of an image in an area magnified by the electronic zoom function ~~is maximized~~ based on an output of the image processor and the electronic zoom data, upon taking into consideration a manufacturing error of the optical apparatus ~~being taken into consideration,~~

wherein the calculation generates a control signal for maximizing the sharpness, and

wherein the reflection-type variable optical-property element is driven by the driving circuit based on the control signal.

16.(Currently Amended) An optical apparatus comprising:

an optical system including a reflection-type variable optical-property element;

a driving circuit ~~for driving~~ configured to drive the reflection-type variable optical-property element;

an image sensor arranged at an image position of the optical system;

an arithmetical unit connected with the driving circuit; and

an image processor connected with the arithmetical unit,

wherein the ~~optical apparatus~~ image processor is provided with an electronic zoom function in that an image ~~formed on~~ picked up by the image sensor ~~by the optical system~~ is magnified ~~by the image processor, and~~ based on electronic zoom data,

wherein the arithmetical unit performs a calculation for obtaining an amount of aberration of an image in an area magnified by the electronic zoom function based on an output of the image processor and the electronic zoom data,

wherein the calculation generates a control signal based on the amount of aberration, and

wherein the reflection-type variable optical-property element is driven by the driving circuit ~~so that aberration of an image in an area magnified by the electronic zoom function is determined~~ based on the control signal.

17.(Currently Amended) An optical apparatus according to claim 2, wherein the optical system including the reflection-type variable optical-property element is a single focal-length optical system.

18.(Currently Amended) An optical apparatus according to claim 2, wherein the optical system including the reflection-type variable optical-property element is a zoom optical system.

19.(Previously Presented) An optical apparatus according to claim 2, further having an autofocus system.

20.(Currently Amended) An optical apparatus according to claim 2 [[19]],

wherein the driving circuit outputs driving information to be supplied to the variable optical-property element, and

wherein image-pickup operation is performed while [[while]] the driving information is changed to find a specific value of the driving information that causes a contrast of a picked-up image to be substantially maximized so that the variable optical-property element is driven on a basis of the specific value of the driving information.

21.(Currently Amended) An optical apparatus according to claim 2, wherein the optical apparatus further comprises a shake sensor so as to provide an image shake compensating function in that the reflection-type variable optical-property element is driven by the driving circuit in accordance with a shake detected ~~buy~~ by the shake sensor.

22.(Currently Amended) An optical apparatus comprising:

an optical system having a reflection-type variable optical-property element;

a driving circuit ~~for driving~~ configured to drive the reflection-type variable optical-property element;

an image sensor arranged at an image position of the optical system;

an arithmetical unit connected with the driving circuit; and

an image processor connected with the arithmetical unit,

wherein the optical system further comprises at least one optical element unit,

wherein the ~~optical apparatus~~ image processor is provided with an ~~electric~~ electronic zoom function in that an image ~~formed on~~ picked up by the image sensor ~~by the optical system~~ is magnified ~~by the image processor~~ based on electronic zoom data,

wherein the reflection-type variable optical-property element and the optical element unit are driven in association with one another in accordance with performance of the electronic zoom function,

wherein the arithmetical unit performs a calculation for obtaining sharpness of an image in an area magnified by the electronic zoom function based on an output of the image processor and the electronic zoom data,

wherein the calculation generates a control signal based on the sharpness, and

wherein the reflection-type variable optical-property element is driven by the driving circuit ~~so that sharpness of an image in an area magnified by the electronic zoom function is determined~~ based on the control signal.

23.(Previously Presented) An optical apparatus according to claim 2, further comprising a stop constructed and arranged to be opened when the electronic zoom function is performed.

24.(Previously Presented) An optical apparatus according to claim 2, wherein the image sensor comprises a plurality of pixels and an electronic zoom magnification by the electronic zoom function satisfies the following condition in a preset state:

$$1.05 < \beta_E < 30 \times \sqrt{(M/10^6)}$$

where β_E is the electronic zoom magnification and M is a number of the pixels of the image sensor.

25.(Previously Presented) An optical apparatus according to claim 2, wherein the image sensor comprises a plurality of pixels and a number of the pixels of the image sensor satisfies the following condition in a preset state:

$$M \geq \text{two hundred thousand}$$

where M is the number of the pixels of the image sensor.

26.(Previously Presented) An optical apparatus according to claim 2, wherein the optical apparatus is a telephone.

27.(Previously Presented) An optical apparatus according to claim 2, wherein the optical apparatus is a mobile phone.

28.(Previously Presented) An optical apparatus according to claim 2, further comprising an image display element for displaying the image.

29.(Previously Presented) An optical apparatus according to claim 2, wherein the optical apparatus is an endoscope.

30.(Previously Presented) An optical apparatus according to claim 2, wherein the variable optical-property element is a variable mirror.

31.(Previously Presented) An optical apparatus according to claim 2, wherein the optical system comprises at least two optical element units, and wherein when the electronic zoom function is performed, at least one of the optical element units is moved to thereby maximize sharpness of a part of an image to be used.

32.(Currently Amended) An electronic imaging apparatus comprising:

an optical system having a reflection-type variable optical-property element;

a stop arranged in the optical system;

an image sensor arranged at an image position of the optical system;

a driving circuit configured to drive the reflection-type variable optical-property element;

an arithmetical unit connected with the driving circuit; and

an image processor connected with the arithmetical unit,

wherein the ~~optical apparatus~~ image processor is provided with an electronic zoom function in that an image ~~formed on~~ picked up by the image sensor ~~by the optical system~~ is magnified ~~by the image processor~~ based on electronic zoom data,

wherein the arithmetical unit performs a calculation for obtaining a value of F number based on the electronic zoom data,

wherein the calculation generates a control signal based on the value of F number, and

wherein, when the electronic zoom function is performed, the stop is opened larger than in a condition where the electric zoom function is unused, based on the control signal.